Ref. No. Ex/PG/PHAR/T/127A/2017

MASTER OF PHARMACY FIRST YEAR 2ND SEMESTER EXAMINATION 2017

Subject: Pharmaceutics II

Time : 3 hours **(Attempt any five questions at least two from each group)** Full Marks : 100

Group – A

Use separate answer script for each group

1. Write the significances for loop formation in mRNA. How does it take place? What is splicing? Give its importance. How mRNA is detached from DNA? Why does it not coil to DNA strands? How does 5′ end of mRNA is projected? Give details. Write the steps involved for amplification of a DNA by PCR.

   2+2+1+2+1+2+4+6 = 20

2. What is a cDNA transformation vector? How can you design an ideal such vector. Write down the steps involved to recombination of a cDNA in a vector and cloning the same.

   2+6+12 = 20

3. What is gene therapy? What are the draw-backs of gene therapy? Write the significance of antisense therapy. How will you design an antisense oligomer for therapeutic purpose? What is biotransformation? Give its importance. How will you improve a biotransformation process?

   1+3+3+5+2+3+3 = 20

M. PHARMACY FIRST YEAR SECOND SEMESTER, 2017

Subject: PHARMACEUTICS-II **Time: Three Hours** **Full Marks: 100**

GROUP-B

Use separate Answer scripts for each Group.

Q. No		Marks
B4	(a) What are the different mechanisms of drug targeting? Comment on the difficulties in exploiting the Enhanced Permeation and Retention effect to develop targeted delivery systems for cancer treatment.	6
	(b) Only enlist the different factors need to be considered for designing polymer drug conjugates. Give one example.	5
	(c) Depict how and why the drug release profiles are different for TAXUS and CYPHER stents? What has been the principal limitation of polymeric drug eluting stents.	4
	(d) Write the expressions for Higuchi and Regar-Peppas models of drug release. From these expressions, how can one predict the governing mechanism of drug release?	5
B5	(a) Give structures of 5 polymers used for drug. Ensure the polymer list contains at least one natural, one bulk-degrading, one surface degrading, and one block copolymer.	5
	(b) A polyethyleneimine sample made of the following distribution is given. Calculate M_n, M_w, and polydispersity.	6

No. of moles	10	20	30	50	30
Mol. Wt.	30	50	100	150	200

	(c) Enlist the methods used for determination of molecular weight explaining at least one method in details.	6
	(d) Describe the advances in method of synthesis of polymers which allow obtaining polymers with narrow MW distribution.	3
B6.	(a) An industrial pharmacist would like to design a sustained-release drug product to be given every 12 hours. The active drug ingredient has an apparent volume of distribution of 10 L, an elimination half-life of 3.5 hours, and a desired therapeutic plasma drug concentration of 20 mg/mL. Calculate total amount of drug needed, assuming no loading dose.	4
	(b) Illustrate the principal mechanisms of responsive polymers, only schematically wherever possible.	6
	(c) What do you mean by T_g. Expalin how T_g is an important criteria for formulation development. Explain with suitable equations, the methods to determine drug polymer miscibility.	10

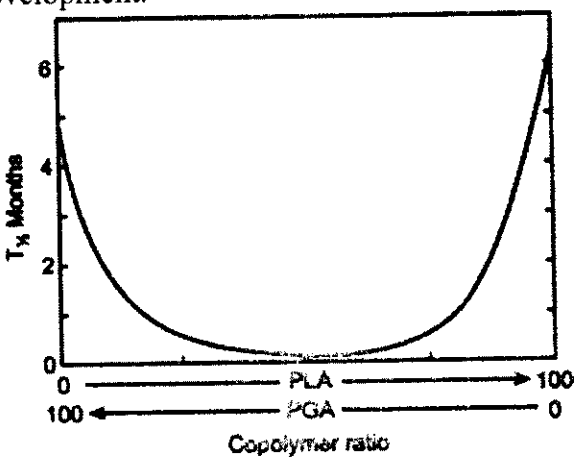
: 100

Marks

B7. Examine the graphs/ cartoons and explain in not more than four sentences: The phenomenon observed, the reason behind the phenomenon observed, and significance in pharmaceutical development. 20

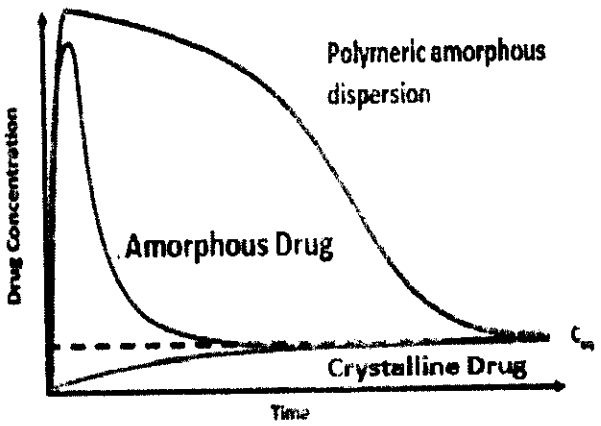
(a)

Degradation profile of PLGA with different PLA, PGA ratios. 6



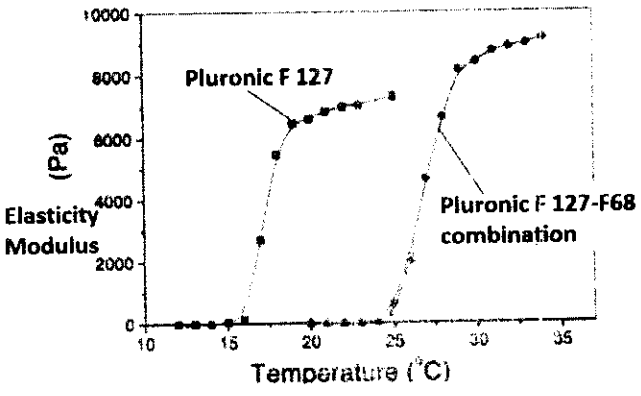
(b)

Drug release profile from different solid forms of a drug. 5



(c)

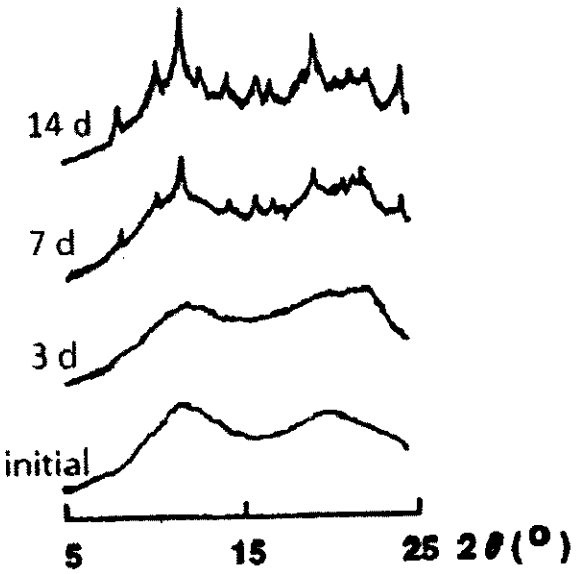
Elasticity modulus of F127 and F68 mixture at different temperatures. 6



10

(d)

XRD intensity of nifedipine:PVP mixture on different days.



(e)

DSC thergogram of a Drug:Polymer mixture.